L1: Entry 18 of 18 File: USPT Apr 28, 1998

US-PAT-NO: 5743477
DOCUMENT-IDENTIFIER: US 5743477 A

TITLE: Insecticidal proteins and method for plant protection

DATE-ISSUED: April 28, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Walsh; Terence A.	Zionsville	IN		
Houtchens; Robert A.	Milford	MA		
Strickland; James A.	Midland	MI		
Orr; Gregory L.	Ashley	MI		
Merlo; Donald J.	Midland	MI		

US-CL-CURRENT: 424/94.6; 435/198

CLAIMS:

What is claimed is:

1. A method of protecting a plant or a part thereof against insect infestation by one or more corn rootworms, potato beetles, armyworms, borers, cutworms, wireworms, earworms and aphids, comprising presenting to a loci wherein said insect(s) is to be controlled or combated an insect controlling amount of a naturally occurring plant non-specific lipid acyl hydrolase, said plant non-specific lipid acyl hydrolase having an amino acid sequence that includes the serine hydrolase active site motif Gly-Xxx-Ser-Xxx-Gly, said plant non-specific lipid acyl hydrolase being one that is inactivated by treatment with diisopropyl fluorophosphate, and said plant non-specific lipid acyl hydrolase being derived from a plant species other than that of the plant or plant part to be protected.

2. The method of claim 1, wherein the plant non-specific lipid acyl hydrolase is isolated from potato tuber and leaves, leaves of P. multiflora or P. vulgaris, rice bran, barley endosperm, maize roots or alfalfa.

3. The method of claim 2, wherein the plant non-specific lipid acyl hydrolase is a protein having the amino acid sequence of one of the patatin polypeptides set forth in FIG. 3.

4. The method of claim 1, wherein the plant protected from insect infestation is maize, rice or potato.

5. A method of protecting a plant or a part thereof wherein the plant is not a potato plant, against insect infestation by one or more corn rootworms, potato

beetles, armywormsr borers, cutworms, wireworms, earworms and aphids, comprising presenting to a loci wherein said insect(s) is to be controlled or combated an insect controlling amount of a naturally occurring patatin.

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Merlo; Donald J.	Midland	MI		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
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APPL-NO: 07/ 936163 [PALM]
DATE FILED: August 27, 1992

INT-CL: [06] A01 N 63/00, C12 N 9/20

US-CL-ISSUED: 424/94.6; 435/198
US-CL-CURRENT: 424/94.6; 435/198

FIELD-OF-SEARCH: 435/198, 424/94.6, 47/50, 47/DIG.11

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	2198991	April 1940	Dutton et al.	117/3
☐	4797276	January 1989	Herrnstadt	424/84
☐	4940840	July 1990	Sunslow et al.	424/84

FOREIGN PATENT DOCUMENTS

L1: Entry 12 of 18 File: USPT Jan 15, 2002

US-PAT-NO: 6339144
DOCUMENT-IDENTIFIER: US 6339144 B1
**** See image for Certificate of Correction ****

TITLE: Proteins having insecticidal activities and method of use

DATE-ISSUED: January 15, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cigan; Amy L.	Des Moines	IA		
Czapla; Thomas	Urbandale	IA		
Fallis; Patricia Lynne	Polk City	IA		
Meyer; Terry	Urbandale	IA		
Mundell; Scott A.	West Des Moines	IA		
Sabus; Brian T.	Johnston	IA		
Schubert; Karel R.	Norman	OK		

US-CL-CURRENT: 435/196; 530/350

CLAIMS:

What is claimed is:

1. A substantially purified lipid acyl hydrolase isolated from a member of the genus Pentaclethra, wherein said lipid acyl hydrolase has insecticidal properties.

2. The lipid acyl hydrolase of claim 1, wherein said lipid acyl hydrolase is isolated by a process comprising the steps of:

a) preparing a crude extract from at least one seed of a plant from the genus Pentaclethra, said extract comprising said lipid acyl hydrolase; and

b) purifying said lipid acyl hydrolase by chromatography.

3. The lipid acyl hydrolase of claim 1, wherein said lipid acyl hydrolase is toxic to an insect from the order Coleoptera.

4. The lipid acyl hydrolase of claim 3, wherein said insect is a corn rootworm.

5. A substantially purified polypeptide having insecticidal activity against corn rootworm, wherein said polypeptide shares at least 60% amino acid sequence identity with an amino acid sequence selected from the group consisting of:

a) the amino acid sequence set forth in SEQ ID NO:2; and

b) residues 29-409 of the amino acid sequence set forth in SEQ ID NO:2.

6. The polypeptide of claim 5, wherein said amino acid sequence identity is at least 70%.

7. The polypeptide of claim 6, wherein said amino acid sequence identity is at least 80%.

8. A substantially purified polypeptide having insecticidal activity against corn rootworm, wherein said polypeptide shares at least 90% amino acid sequence identity with an amino acid sequence selected from the group consisting of:

a) the amino acid sequence set forth in SEQ ID NO:2; and

b) residues 29-409 of the amino acid sequence set forth in SEQ ID NO:2.

9. The polypeptide of claim 8, wherein said amino acid sequence identity is at least 95%.

10. A substantially purified polypeptide comprising an amino acid sequence selected from the group consisting of:

a) the amino acid sequence set forth in SEQ ID NO:2;

b) residues 22-409 of the sequence set forth in SEQ ID NO:2; and

c) residues 29-409 of the amino acid sequence set forth in SEQ ID NO:2.

11. The polypeptide of claim 1, wherein said polypeptide comprises the amino acid sequence set forth in SEQ ID NO:2.

12. The polypeptide of claim 1, wherein said polypeptide comprises the amino acid sequence set forth as residues 22-409 of SEQ ID NO:2.

13. The polypeptide of claim 1, wherein said polypeptide comprises the amino acid sequence set forth as residues 29-409 of SEQ ID NO:2.

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L1: Entry 5 of 18 File: USPT Dec 2, 2003

US-PAT-NO: 6657046
DOCUMENT-IDENTIFIER: US 6657046 B1

TITLE: Insect inhibitory lipid acyl hydrolases

DATE-ISSUED: December 2, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Alibhai; Murtaza F.	Chesterfield	MO		
Rydel; Timothy J.	St. Charles	MO		

US-CL-CURRENT: 530/350; 424/94.6, 435/195

CLAIMS:

What is claimed is:

1. An isolated peptide exhibiting lipid acyl hydrolase activity and corn rootworm insect inhibitory bioactivity and consisting of the amino acid sequence as set forth in SEQ ID NO:21.

2. An isolated peptide consisting of the amino acid sequence as set forth in SEQ ID NO:21.

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L2: Entry 6 of 6 File: USPT Oct 20, 1998

US-PAT-NO: 5824864
DOCUMENT-IDENTIFIER: US 5824864 A
**** See image for Certificate of Correction ****

TITLE: Maize gene and protein for insect control

DATE-ISSUED: October 20, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fox; Timothy W.	Des Moines	IA		
Garnaat; Carl W.	Ankeny	IA		
Meyer; Terry EuClaire	Urbandale	IA		

US-CL-CURRENT: 800/265; 435/252.3, 435/419, 536/23.6, 800/279, 800/302

CLAIMS:

What is claimed is:

1. An isolated DNA molecule having the nucleotide sequence shown in FIG. 1 (SEQ ID No. 1) or a structural equivalent thereof which hybridizes to SEQ ID No. 1 under high stringency and encodes a polypeptide retaining the insecticidal actiivty of 5C9.

2. An isolated polynucleotide encoding the amino acid sequence of the 5C9 polypeptide, said polypeptide having the amino acid sequence shown in FIG. 2 (SEQ ID NO:2).

3. A polynucleotide according to claim 2, wherein said polynucleotide is a RNA molecule.

4. A polynucleotide according to claim 2, wherein said polynucleotide is a DNA molecule.

5. An expression cassette comprising the DNA of claim 1, operably linked to one or more regulatory sequences not naturally associated with said DNA and that cause the expression of the DNA in plants.

6. Transformed plant cells comprising at least one expression cassette according to claim 5.

7. Transformed plant cells according to claim 6, further characterized as being cells of a monocotyledonous species.

8. Transformed plant cells according to claim 7, further characterized as being maize, sorghum, wheat, or rice cells.

9. Transformed plant cells according to claim 6, further characterized as being cells of a dicotyledonous species.

10. Transformed plant cells according to claim 9, further characterized as being cells soybean, alfalfa, rapeseed, tobacco, sunflower, cotton, or tomato cells.

11. A maize cell or tissue culture comprising cells according to claim 8.

12. A transformed plant comprising transformed plant cells containing at least one copy of the expression cassette of claim 5.

13. An expression cassette comprising the DNA of claim 1, operably linked to one or more bacterial expression regulatory sequences that cause the expression of the DNA in bacterial cells.

14. Bacterial cells comprising, as a foreign plasmid, at least one copy of an expression cassette of claim 13.

15. A method of controlling insect infestation of a plant comprising providing an insecticidally effective amount of the polypeptide encoded by the polynucleotide of claim 2.

16. The method of claim 15 wherein the polypeptide is provided by plant-colonizing microorganisms which produce the polypeptide after the microorganisms are applied to the plant.

17. The method of claim 15 wherein the polypeptide is provided by expression of a polynucleotide encoding the polypeptide, the polynucleotide having been incorporated in the plant by the previous genetic transformation of a parent cell of the plant.

18. A method of controlling insect infestation of a plant comprising inserting into the genome of the plant a polynucldotide according to claim 2, in proper reading frame relative to transcription initiator and promoter sequences active in plants, to cause expression of the polynucleotide at levels that provide an insecticidally effective amount of 5C9 polypeptide in the tissues of the plant that are normally affected by the insects.

19. The method of claim 18 wherein the plant is a monocotyledonous species.

20. The method of claim 19 wherein the plant is a species selected from the group consisting of maize, wheat, rice, and sorghum.

21. The method of claim 18 wherein the plant is a dicotyledonous species.

22. The method of claim 21 wherein the plant is a species selected from the group consisting of soybean, alfalfa, sunflower, safflower, rape, tobacco, cotton, and tomato.

23. The method of claim 18, further comprising culturing cells or tissues from the plant, introducing into the cells of the cell or tissue culture by a

transformation method at least one or more copies of an expression cassette of claim 6 are present, and regenerating whole plants from the cell or tissue culture.

24. The method of claim 23 further comprising sexually or clonally reproducing the whole plant so that at least one copy of the sequence provided by the expression cassette is present in the cells of progeny of the reproduced plant.

25. A method of controlling insect infestation of a plant by imparting insect resistance to plants of a taxon susceptible to infestation, the method comprising selecting a fertile insect resistant plant prepared by the method of claim 24 from a sexually compatible taxon, sexually crossing the insect resistant plant with a plant from the infestation-susceptible taxon, recovering reproductive material from the progeny of the cross, and growing insect resistant plants from the reproductive material.

26. The method of claim 25 for imparting insect resistance in a taxon further comprising repetitively crossing the insect resistant progeny with infestation-susceptible plants from the taxon, and selecting for expression of insect resistance along with any other desired characteristics of the susceptible taxon from among the progeny of the cross, until the desired percentage of the characteristics of the susceptible taxon are present in the progeny along with insect resistance.

27. A method of controlling insect infestation of a plant comprising inserting into the genome of the plant a DNA according to claim 1, in proper reading frame relative to transcription initiator and promoter sequences active in plants, to cause expression of the DNA at levels that provide an insecticidally effective amount of 5C9 polypeptide in the tissues of the plant that are normally affected by the insects.

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